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ABSTRACT

In the past management information systems (MIS) have focused on data relating to the internal operations of the institution (e.g., registration and space utilization). Recently, however, strategic planning as a means of establishing long-range goals is becoming increasingly dependent upon data external to the institution, such as demographics and social and economic factors. Strategic planning requires an MIS capable of monitoring social changes, assessing institutional strengths, and integrating internal and external data. The tools of strategic planning include needs assessment, trend analysis, environmental scanning, and market analysis. These tools may be used by institutions at various stages of development (i.e., emergence, growth, development, regeneration, and decline) and in a variety of operational modes (i.e., hierarchical, collegial, and collective bargaining). The purpose of the MIS function is to gain insights into which of several options an institution will choose over a several year period. Technology transfer is an excellent example of a public service function requiring strategic planning. In Ohio, the use of strategic planning in this area is illustrated by the efforts of the Ohio Technology Transfer Organization, an information/assistance network for small businesses and industries sponsored by Ohio State University and Ohio's two-year colleges. (Appendices provide data tables and survey instruments useful to strategic planning.) (Author/KL)

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STRATEGIC PLANNING: A NEW ROLE FOR MANAGEMENT INFORMATION SYSTEMS

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ABSTRACT

Management information systems in the past have tended to focus on data elements relating to internal operations of the institution such as registration, scheduling, class rosters, space utilization, grade reporting, student aid, payroll, budgeting, and other administrative applications. Strategic decision making as a part of the higher education planning process, however, is becoming increasingly more dependent upon data elements external to the institution.

Strategic planning is, essentially, a way to match an organization's resources to a changing environment. It requires a capability to moniter changes in society, assess the strengths of the institution, and a way to match the two. Tools to evaluate the needs of society include (1) needs assessment, (2) trend analysis, (3) environmental scanning, and (4) market analysis. These tools can be used in institutions at various stages of maturation (emergence, growth, development, regeneration, decline) and a variety of modes of operation (hierarchial, collegial, collective bargaining).

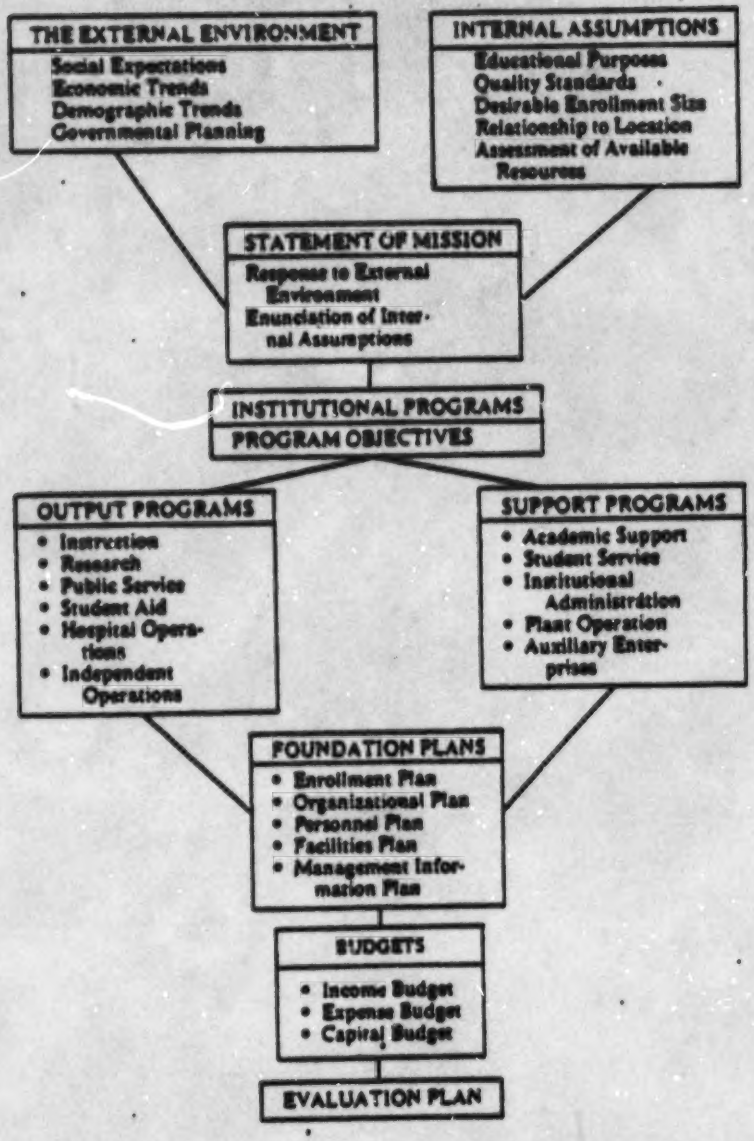
Strategic Planning

At the 1974 CAUSE Conference, John D. Millett, former Executive Vice President of the Academy for Educational Development and Chancellor Emeritus of the Ohio Board of Regents, stated that the largest single challenge facing higher education was that of planning. He stated:

> Planning for the future is the largest challenge facing higher education today. It is a challenge that can only be met with the courage to innovate, the will to influence events rather than to surrender to them. But the courage to innovate and the will to change have some hope of achievement only if information analysis and assessment have preceded action.
>
> Higher education management needs information. And then higher education management needs the capacity to know how to use information as the basis for trying to achieve a desirable tomorrow. Just as human intelligence is our product, so also is human intelligence our only hope for the future of higher education itself.[1]

During the post World War II years institutional planning had a focus on acquiring more resources and building facilities for the increased number of students resulting from the equal right demand for access to postsecondary education. Planning in postsecondary education during the 1960s was undertaken in response to immediate needs with minimum regard to the future. During the 1970s the influx of traditional 18 to 22 year old students began to stabilize. Many private and public senior institutions began to experience the impact of a broad range of demographic, social, political, and economic forces. As a result, organizations such as The Council for the Advancement of Small Colleges (now The Council of Independent Colleges), the Academy for Educational Development and the American Association of State Colleges and Universities launched programs relating to comprehensive institutional planning. The planning process model developed as a result of the AED project is displayed in FIGURE 1.[2] These projects and others like it all stressed the need to assess the external environment. The literature began to reflect descriptions of institutional planning processes including some way to assess the external environment.[3]

THE PLANNING PROCESS IN HIGHER EDUCATION



John D. Millett, Higher Education Planning: A Report of Experience and a Forecast of Strategies for Change (Washington, D.C.: Academy for Educational Development, 1978).

The literature also began to reflect articles intended to clarify the concept of strategic planning. The term "strategy" is used to refer to long-term intentions transcending annual or biannual operations planning. Ellison states:

> It is within the framework of strategy that annual budget planning and preparation take place. Alfred D. Chandler, in his business history Strategy and Structure, defined strategy as "determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals." Strategic decision-making is concerned with the long-term health of an organization rather than with day-to-day operations. Also, a strategy is not in force until an institution has made a resource commitment to support carrying out the strategy.[4]

Peters states:

> Strategic planning is a process that directs an organization's attention to the future, thereby enabling the organization to adapt more readily to change.
>
> The major contribution of the planning process to good management is the rationality it imposes on an organization's efforts to anticipate its future.
>
> Creative organizations are able to examine the basic assumptions under which they operate and to adapt them to new situations. Creativity is a basic tool for good planning and not some poetic appendage to the process.[5]

Thieme states:

> Real strategic planning does not start with assumptions about institutional mission. Mission can only be realistically set after a careful assessment of the external environment and the internal strengths and weaknesses of the institution and after identification of practical options.[6]

Ross states:

> Planning is no more than a conscious, rational process of deciding upon a desired future state and commiting resources to achieve it. When speaking about planning, it is necessary to differentiate between informal planning, which everyone does, and formal strategic planning. Even the most unsophisticated manager gathers and organizes data, makes assumptions about the specific universe, establishes goals and objectives, and sets priorities for activity. Informal planning differs from formal planning in that in the first case the manager makes the decisions

alone. The informal plan lacks a multi-disciplinary perspective, and has no rigorous methodology.[7]

Collier indicates there are five essential elements in the strategic planning concept:

1. Strategic planning involves the explicit consideration of a set of decisions which determine the future of the entire organizational entity.

2. The total strategic planning process is comprised of the initial strategy formulation process (in which the set of strategic decisions are made) and the implementation/budgeting process (in which the initial strategy is reformulated and an emergent strategy evolves).

3. One of the primary criteria used in making strategic decisions is the achievement of a simultaneous match among (1) the organization's resources, (2) its proximate environment, and (3) certain inherent characteristics of the organization.

4. Strategic planning encourages organizations to take the initiative in creating their own future and to consider the future they are creating for themselves.

5. The set of strategic decisions should be synergistic and they should increase organizational flexibility.[8]

Thieme suggests there are seven key objectives of the strategic planning process:

1. Challenge the prevailing assumptions about the role and purpose of the institution.

2. Identify service area needs that are not adequately met.

3. Develop a plan that recognizes both external and internal realities.

4. Achieve consensus among key organization members on future strategies.

5. Favorable influence the perspective of internal and external constituent groups.

6. Link strategic planning to operational management.

7. Educate key people as to the external and internal realities as well as to the values and aspirations of key groups.[9]

Shirley and Caruthers specify five major dimensions of an organization as (1) the environmental dimension, (2) the strategic dimension, (3) the structural dimension, (4) the behavioral dimension, and (5) the program dimension.[10]

Their conceptualization is displayed in FIGURE 2.

Cope states that "Strategic planning assumes an open system in which organizations are dynamic and constantly changing as they integrate information from turbelent environments. Strategic planning focuses on the external environment, on qualitative information and intuitive decisions regarding resource commitments, and on integrated, participatory involvement."[11]

The Management Information System

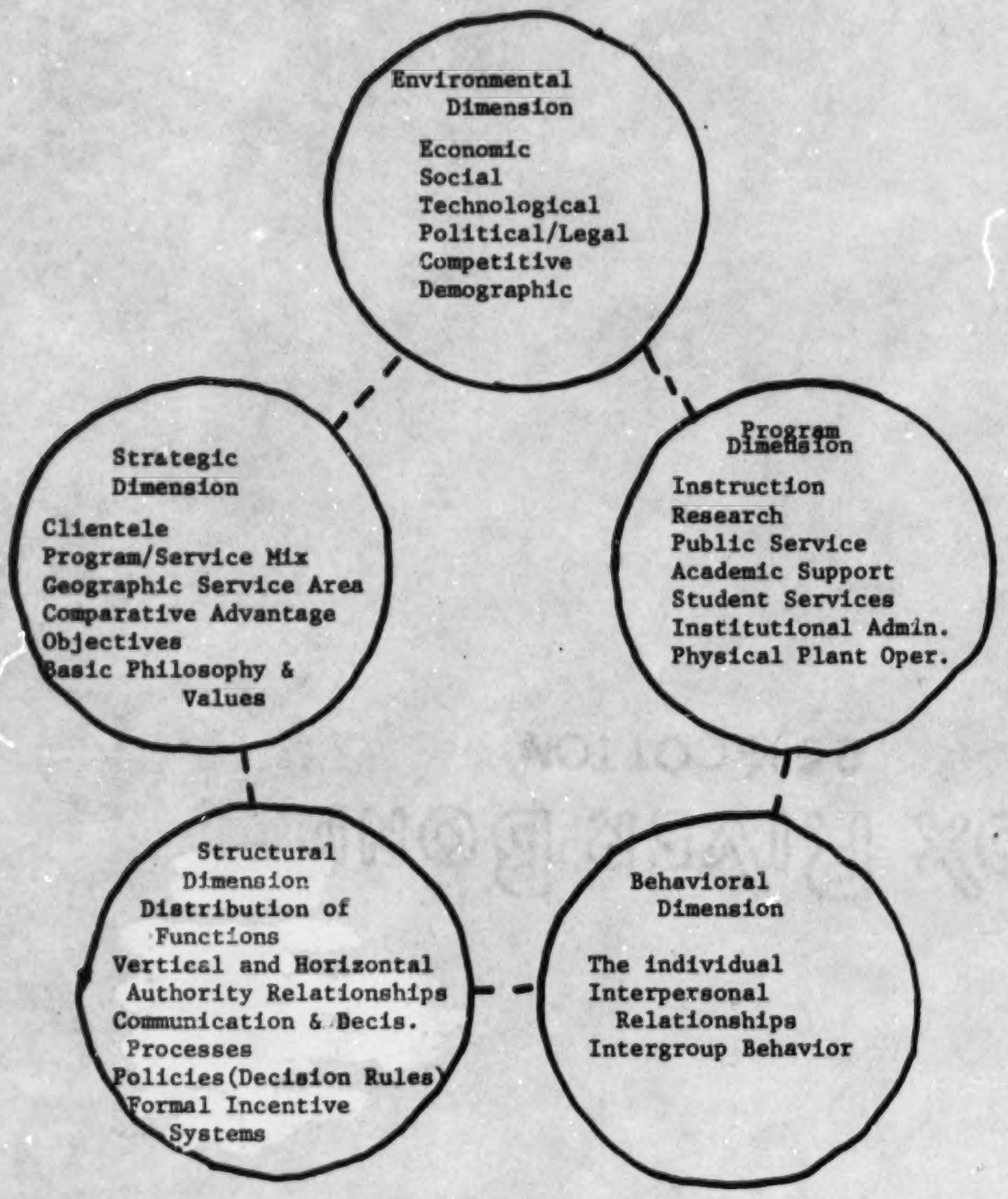
Planning, however defined, has a focus on designing and shaping the future as opposed to merely changing. Strategic planning must consider a critical analysis of forces, trends, and their effects and must be firmly based on demographics, social, political, and economic data sets. Integral to planning are methodologies for (1) generating goal statements and standards; (2) sorting, categorizing and prioritizing goals; (3) refining goals, noting interrelationships among them; and (4) specifying the relevance of goals to the support base.

Data are the foundation upon which to build the multi-year institution/system Plan, a document containing a grand design representing intelligent anticipation of activities, events, and experimental observations carefully specified in advance to move from one point to another. Data are needed (1) about environmental assumptions upon which to base planning; (2) about potential clients and unmet societal needs growing out of a needs assessment or market analysis/market segmentation process; and (3) for managing institutional areas as specified above. Probably most important, however, the data analysis process must strive to produce meaning as it relates to efficiency and effectiveness of relating dollars to institutional goals and objectives.

Planning, then, is critical analysis and requires the development of an analytical capability to collect, array, and analyze a large number of variables in an effort to portray a system of relationships, causality in some cases. The

FIGURE 2

FIVE MAJOR DIMENSIONS OF AN ORGANIZATION*



* Robert C. Shirley and J. Kent Caruthers, "Strategic Planning for Higher Education," presented at the annual meeting of the American Association of State Colleges and Universities, November 20, 1979.

latter is the primary function of the Management Information System.

Management information systems in the past have tended to focus on data elements relating to the internal operations of the institution such as registration, scheduling, class rosters, space utilization, grade reporting, student aid, payroll, budgeting, and other administrative applications. Data have been collected and grouped in files labeled student, personnel, financial, and space. Sometimes the data elements are similar for various reporting agencies and occasionally the independent files can be integrated to produce meaningful reports on topics such as program cost analysis and student longitudinal studies. Occasionally independent file reports or integrated file reports are synchronized with decision points in the annual planning/budgeting cycle but usually stop short of strategic planning. Management information systems of the future must include the integration of internal and external data sets as displayed in FIGURE 3.

Strategic Planning In Differing Contexts

Organizations pass through various stages of development and have different characteristics of organizational functioning. Stages of organizational development were listed as emergence, growth, development, regeneration, and decline.[12] Types of organizational functioning can be listed as hierarchial, Theory X; collegial, Theory Y; and political, collective bargaining.[13] In addition, tools of strategic planning can be labeled needs assessment, trend analysis, environmental scanning, and market analysis. These three dimensions form a model to help assist institutions to diagnose where they are in the evolutionary process. (See FIGURE 4) The challenge to postsecondary institutions is to diagnose where they are with regard to the first two dimensions and develop elements of strategic planning appropriate for their context.

FIGURE 3

THE INTEGRATED INTERNAL-EXTERNAL MANAGEMENT INFORMATION SYSTEM

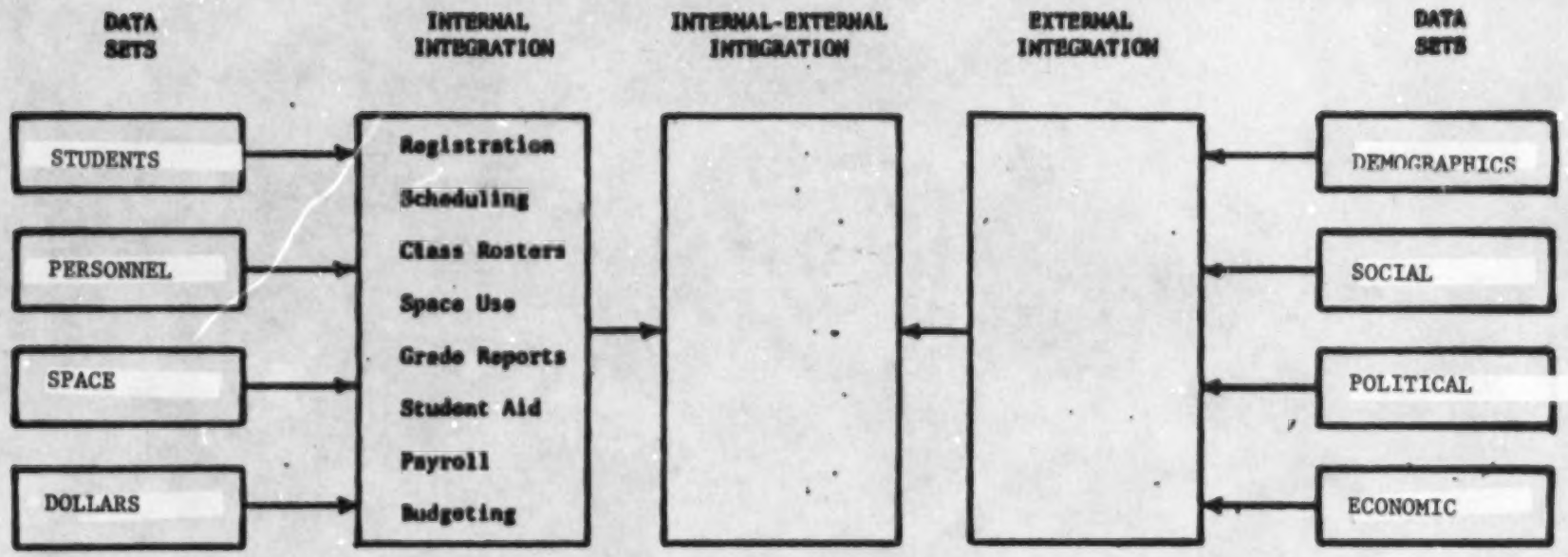
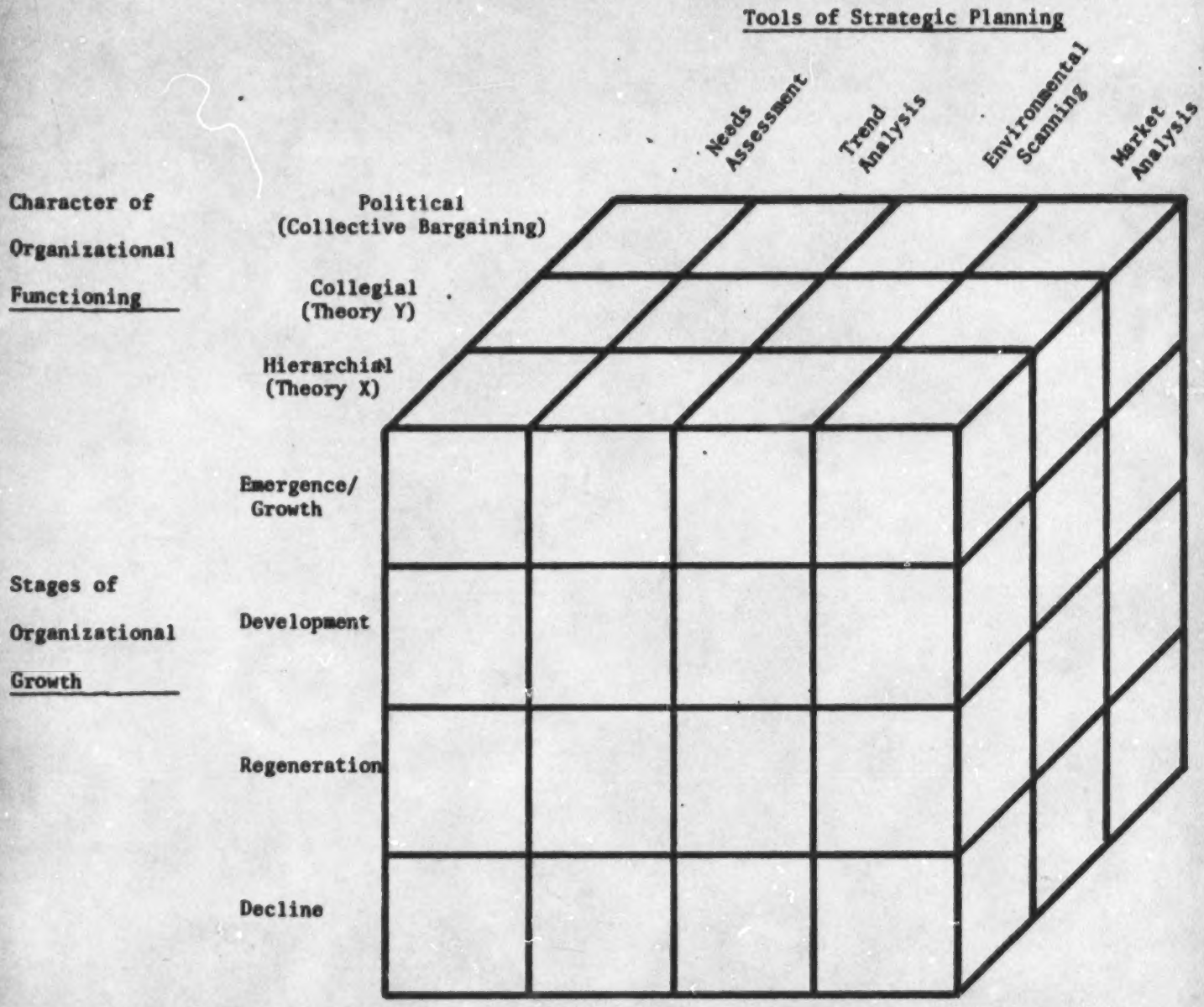


FIGURE 4

MODEL FOR CATEGORIZING DIMENSIONS OF STRATEGIC PLANNING

BY STAGE OF ORGANIZATIONAL GROWTH AND CHARACTER OF ORGANIZATIONAL FUNCTIONING



Ahmann indicates that needs assessment is a generic term to describe a process "for determining the discrepancy between existing and desired levels of attainment with respect to specific educational goals."[14] He describes types of needs assessment and the state of the art which has shifted from informal to formal, systematic efforts beginning in the early 1970s attributable primarily to the accountability movement stimulated by federal legislation. Vlahos traces several changes in needs assessment techniques including its application to perceptions of the community and business and industry.[15]

Trend analysis consists of the systematic review of comparable data over time in order to determine direction. Harris and Grede present two examples of change in the labor force in the United States.[16] (See FIGURES 5 and 6 in Appendix A) Frances and Warmbrod present data about changing enrollments.[17] (See FIGURES 7 through 10 in Appendix A) Wattenbarger and Bibby, Conroy, and Chambers present data about financing education.[18] (See FIGURES 11 through 13 in Appendix A)

Environmental scanning consists of periodic sampling of data which may ultimately form the foundation of trends. An example of such a scan is the College Entrance Examination Board study indicating that 36 percent of the population between the ages of 16 and 65, more than 40 million Americans, are in a career transition status.[19] Research by the College Board, however, indicates that only about ¼ of the 58,400,000 persons in postsecondary education are enrolled in colleges and universities. (See FIGURE 14 in Appendix B) Other examples of scanning include The Ohio Board of Regent's survey of business/industry training programs and the Health Planning and Development Council's survey of employee health promotion programs sponsored by business and industry. (See Appendix B)

Market analysis consists of obtaining detained information about markets or market segments served or unserved by the institution. Market analysis is an organized effort to identify the relationship between specific wants

FIGURE 6

Estimated Distribution of the Employed Labor Force by Occupational Groups, 1960 and 1975.

Occupational Group	1960	1975
Professional Workers and High-Level Managers	12%	14%
Middle Manpower Occupations	(24)	(35)
Paraprofessionals, Semiprofessionals, and High-Level Technicians	2	6
Middle-Level Technicians, Middle-Level Managers, Foremen, and Leading Men	6	8
Skilled Clerical, Sales, and Kindred Workers	10	15
Very Highly Skilled Craftsmen and Journeymen	6	6
Skilled Tradesmen and Craftsmen	10	7
Semiskilled Operatives	20	17
Semiskilled Clerical and Sales Workers	12	9
Service Workers, Semiskilled and Unskilled	14	12
Laborers, including Farm Workers	8	6
	100%	100%

Note: All percentages are approximate and rounded.

Source: Norman C. Harris and John F. Grede, Career Education in Colleges (San Francisco: Jossey-Bass Publishers, 1977) pp. 52.

FIGURE 7

TRENDS IN ENROLLMENT

Head-Count Enrollment
All Institutions

YEAR	TOTAL DEGREE CREDIT ENROLLMENT	TOTAL DEGREE CREDIT AND NON-DEGREE CREDIT ENROLLMENT
1950	2,296,592	
1951	2,116,440	
1952	2,148,284	
1953	2,250,701	
1954	2,468,596	
1955	2,678,623	
1956	2,946,985	
1957	3,068,417	
1958	3,258,556	
1959	3,402,297	
1960	3,610,007	
1961	3,891,230	
1962	4,206,672	
1963	4,528,516	
1964	4,987,867	
1965	5,570,271	5,967,000
1966	5,928,000	6,438,000
1967	6,406,000	6,964,000
1968	6,983,093	7,572,000
1969	7,542,992	8,066,000
1970	7,985,532	8,649,000
1971	8,188,169	9,025,000
1972	8,341,919	9,298,000
1973	8,602,153	9,694,000
1974	9,109,883	10,322,000
1975	9,830.224	11,291,000
1976	9,710,000	11,121,000
1977	10,010,000	11,415,000
1978		11,391,950
1979		11,669,429

Source: American Council on Education, A Fact Book on Higher Education, Enrollment Data, Second Issue, 1971, Tables 71.8 and 71.22, American Council on Education, A Fact Book on Higher Education, Enrollment Data, Second Issue, 1977, Tables 77.80 and 77.102, and National Center for Education Statistics, The Condition of Education, 1979, p. 106.

FIGURE 8

GROWTH OF ENROLLMENT BY SECTOR

1970-71 to 1977-78
Full-Time-Equivalent Enrollment
Percentage Increase

TYPE		PUBLIC		PRIVATE		TOTAL	
University	1970	1,639,456		555,113		2,194,569	
	1977	1,766,629		578,499		2,345,128	
			+ 7.76		+ 4.21		+ 6.86
Four-Year	1970	1,881,006		1,132,211		3,013,217	
	1977	2,241,668		1,331,665		3,573,333	
			+19.17		+17.62		+18.59
Two-Year	1970	1,478,912		106,236		1,585,148	
	1977	2,340,284		143,472		2,483,756	
			+58.24		+35.05		+56.69
Total	1970	4,999,374		1,793,560		6,792,934	
	1977	6,348,581		2,053,636		8,402,217	
			+26.99		+14.5		+23.69

Source: ACE-NCES Joint Project on Enrollment Trends

FIGURE 9

Enrollment in Vocational Education Programs 1960-61 and 1978-79

Program	Total Number Enrolled 1960-61	Total Number Enrolled 1978-79	Percent Change
Agriculture	805,322	971,726	21
Distribution	306,083	942,057	208
Health	62,160	798,520	1,185
Consumer and Homemaking	1,610,334	3,710,246	130
Technical	122,952	484,076	294
Trade and Industry	963,609	3,436,089	256
Occupational Home Economics	-	589,878	-
Industrial Arts	-	1,683,902	-
Office	-	3,469,134	-
Other	-	1,182,414	-
Total	3,870,460	17,268,042	346

Source: J. Robert Warmbrod, "Vocational Education: Then and Now," VocEd (October 1981), pp. 29-31.

FIGURE 10

Distribution of Enrollment by Program Area
1960-61 and 1978-79

Program Area	Total Enrollment 1960-61 (Percent)	Enrollment in Six Programs 1978-79 (Percent)	Total Enrollment 1978-79 (Percent)
Agriculture	20.8	9.4	5.6
Distribution	7.9	9.1	5.4
Health	1.6	7.7	4.6
Consumer and Homemaking	41.6	35.9	21.5
Technical	3.2	4.7	2.8
Trade and Industry	24.9	33.2	19.9
Occupational Home Economics	-	-	3.4
Industrial Arts	-	-	9.8
Office	-	-	20.1
Other	-	-	6.8

Source: J. Robert Warmbrod, "Vocational Education: Then and Now," VocEd (October 1981), pp. 29-31.

FIGURE 11

TREND ANALYSIS

CONTINUED SHIFT FROM LOCAL TO STATE SUPPORT FOR COMMUNITY COLLEGES

COMPARISON OF STATE SUPPORT, LOCAL SUPPORT, AND STUDENT FEES (MEDIAN PERCENTAGES) FOR 1919, 1968, AND 1980

	1929	1968	1980	1980 RANGE
STATE SUPPORT	3%	51%	66%	21 - 100%
LOCAL SUPPORT	46	21	7	0 - 50
STUDENT FEES	49	20	17	0 - 33

SOURCE: JAMES WATTENBARGER AND PATRICK BIBBY, FINANCING COMMUNITY COLLEGES - 1980 (INSTITUTE OF HIGHER EDUCATION, UNIVERSITY OF FLORIDA) REPORTED IN AACJC LETTER (JULY 23, 1981).

FIGURE 12

SOME DIMENSIONS OF EDUCATION IN THE UNITED STATES

	EXPENDITURES CURRENT DOLLARS	EXPENDITURES 1967 DOLLARS	PERCENT OF GNP	PER PUPIL EXPENDITURES 1967 DOLLARS	PERCENT OF 5-24 YEAR-OLDS ENROLLED IN SCHOOL
1950	$ 8.8 BIL	$12.2 BIL	3.3%	$ 389	67%
1960	24.7 BIL	27.8 BIL	5.0%	615	75%
1970	70.4 BIL	60.5 BIL	7.3%	1,032	76%
1977	131 BIL	72 BIL	7.3%	1,218	76%

SOURCES: STATISTICAL ABSTRACTS OF THE UNITED STATES, 1979, U.S. DEPARTMENT OF COMMERCE, BUREAU OF THE CENSUS, WASHINGTON, D.C. ECONOMIC REPORT OF THE PRESIDENT, 1980 COUNCIL OF ECONOMIC ADVISORS, WASHINGTON, D.C.
CITED IN "VOCATIONAL EDUCATION'S DUAL ROLE: EQUITY AND EXCELLENCE" BY WILLIAM G. CONROY, JR., THE FUTURE OF VOCATIONAL EDUCATION (ARLINGTON, VA.: THE AMERICAN VOCATIONAL ASSOCIATION, 1981), P. 257.

FIGURE 13

Analysis of State Funds for Higher Education

	1981-82 Appropriations (a)		Appropriations per capita (b)		Approp. per $1,000 of personal income (c)		3-year change (d)		10-year change (e)		3-yr. change less inflation (f)		10-yr. change less inflation (g)	
	Amount	Rank	Amount	Rank	Amount	Rank	Per cent	Rank	Per cent	Rank	Per cent	Rank	Per cent	Rank
Alabama	$ 417,757,000	18	$107.39	22	$14.31	10	+11%	44	+291%	6	-12%	44	+ 75%	6
Alaska	122,439	39	305.73	1	23.84	1	+69%	1	+528%	1	+38%	1	+181%	1
Arizona	306,801,000	27	112.98	19	12.81	14	+32%	11	+218%	22	+ 5%	11	+ 41%	22
Arkansas	183,980,000	35	90.60	40	11.06	28	+ 8%	46	+253%	14	-13%	46	+ 58%	14
California	3,339,706,000	1	140.84	5	12.82	13	+19%	27	+290%	7	- 6%	27	+ 75%	7
Colorado	305,791,000	28	106.85	24	10.53	30	+24%	18	+170%	34	- 1%	18	+ 21%	34
Connecticut	259,971,000	31	83.66	37	7.12	48	+18%	34	+133%	45	- 6%	34	+ 4%	45
Delaware	72,125,000	45	121.17	10	11.89	25	+36%	9	+212%	25	+ 9%	9	+ 40%	25
Florida	802,316,000	7	82.37	39	9.05	38	+23%	19	+224%	20	- 2%	19	+ 48%	20
Georgia	498,919,000	13	91.31	33	11.26	27	+30%	13	+208%	26	+ 3%	13	+ 37%	26
Hawaii	154,755,000	38	160.37	4	15.83	9	+30%	12	+159%	36	+ 4%	12	+ 16%	36
Idaho	95,100,000	41	100.75	27	12.47	20	+12%	41	+178%	30	-11%	41	+ 25%	30
Illinois	996,810,000	4	87.30	36	8.28	41	+13%	38	+110%	50	-10%	38	- 8%	50
Indiana	482,494,000	15	87.88	35	9.81	34	+17%	28	+140%	40	- 6%	28	+ 7%	40
Iowa	341,958,000	25	117.37	16	12.51	19	+13%	37	+135%	27	-10%	37	+ 29%	27
Kansas	278,882,000	30	117.98	15	11.78	23	+17%	29	+231%	16	- 7%	30	+ 48%	16
Kentucky	356,281,000	23	97.04	29	12.72	16	+16%	36	+227%	19	- 5%	26	+ 46%	18
Louisiana	454,754,000	17	108.17	20	12.76	15	+38%	7	+229%	18	+10%	7	+ 48%	19
Maine	66,871,000	46	59.46	49	7.48	44	+17%	30	+118%	46	- 7%	29	- 3%	48
Maryland	366,949,000	19	91.53	32	8.73	39	+19%	24	+172%	33	- 5%	24	+ 22%	33
Massachusetts (est.)	384,500,000	20	63.53	47	6.26	48	+16%	32	+180%	29	- 6%	32	+ 28%	29
Michigan	846,532,000	5	91.65	31	9.19	37	+ 5%	48	+124%	47	-16%	48	0%	47
Minnesota (estimated)	515,000,000	12	126.31	8	12.96	12	+12%	42	+213%	23	-11%	42	+ 40%	24
Mississippi	300,534,000	29	119.23	13	18.08	3	+29%	14	+257%	11	+ 3%	14	+ 60%	11
Missouri	352,770,000	24	71.74	43	7.97	42	+12%	40	+137%	43	-11%	40	+ 6%	43
Montana	83,693,000	43	106.39	23	12.43	21	+38%	6	+173%	32	+10%	6	+ 22%	32
Nebraska	187,190,000	34	119.23	12	12.70	17	+24%	17	+281%	10	- 1%	17	+ 61%	10
Nevada	65,851,000	47	82.40	38	7.66	43	+16%	33	+253%	13	- 6%	33	+ 58%	13
New Hampshire	39,323,000	49	42.71	50	4.67	50	+32%	10	+217%	21	+ 5%	10	+ 42%	21
New Jersey	464,787,000	16	63.11	48	5.76	49	+16%	31	+152%	37	- 7%	31	+ 13%	37
New Mexico	171,878,000	37	131.98	7	16.79	4	+36%	8	+279%	8	+ 9%	8	+ 70%	8
New York	1,855,429,000	3	105.66	25	10.27	32	+20%	22	+131%	46	- 4%	22	+ 3%	46
North Carolina	736,882,000	8	125.44	9	15.00	6	+27%	15	+230%	17	+ 1%	15	+ 48%	17
North Dakota	108,536,000	40	166.29	3	18.97	2	+43%	4	+302%	5	+14%	4	+ 80%	5
Ohio (estimated)	698,350,000	9	64.68	46	6.82	47	+ 4%	50	+144%	39	-17%	50	+ 9%	39
Oklahoma	325,553,000	26	107.81	21	11.78	24	+42%	5	+310%	4	+14%	5	+ 84%	4
Oregon	252,602,000	32	95.96	30	10.27	31	+10%	45	+146%	38	-12%	45	+ 10%	38
Pennsylvania	825,491,000	6	68.56	44	7.36	45	+12%	43	+138%	42	-11%	43	+ 6%	42
Rhode Island	88,257,000	42	90.01	34	9.50	36	+19%	25	+180%	28	- 5%	25	+ 25%	28
South Carolina	361,171,000	21	115.79	17	15.89	7	+13%	36	+253%	9	-10%	36	+ 62%	9
South Dakota	52,143,000	48	75.56	42	9.64	35	+ 5%	49	+139%	41	-17%	49	+ 7%	41
Tennessee	357,016,000	22	77.77	41	10.06	33	+12%	39	+213%	24	-10%	39	+ 40%	23
Texas	1,905,008,000	2	133.89	6	13.99	11	+45%	3	+355%	2	+16%	3	+104%	2
Utah	174,139,000	36	119.19	14	15.54	9	+20%	23	+245%	15	- 4%	23	+ 55%	15
Vermont	33,676,000	50	66.23	45	8.44	40	+29%	16	+114%	49	0%	16	- 4%	49
Virginia	543,861,000	10	101.75	26	10.81	29	+22%	20	+258%	12	- 2%	20	+ 58%	12
Washington	497,821,000	14	120.53	11	11.86	26	+ 6%	47	+181%	35	-15%	47	+ 17%	35
West Virginia	192,092,000	33	96.53	28	12.60	18	+21%	21	+177%	31	- 3%	21	+ 24%	31
Wisconsin	531,963,000	11	113.06	18	12.06	22	+14%	35	+138%	44	- 9%	35	+ 5%	44
Wyoming	82,644,000	44	175.53	2	16.04	5	+80%	2	+351%	3	+28%	2	+102%	3
Total	$22,925,101,000		$101.80		$10.84		+29%		+157%		- 4%		+ 33%	

(a) Reported by M. M. Chambers of Illinois State University as state tax funds appropriated for operating expenses and scholarship programs for higher education. Amount of appropriations may be reduced later in some states because of shortfall in revenues. Not included are appropriations for capital outlay or sums from sources other than state taxes, such as student fees. Included are appropriations for annual operating expenses even if appropriated to some other agency of the state for ultimate allocation to institutions of higher education. Pre-allocated state taxes whose proceeds are dedicated to any institution of higher education are included even though periodic appropriation by the legislature may be bypassed. Also included are state tax funds appropriated for scholarships and statewide governing or coordinating boards.

(b) State appropriations divided by the U. S. Census Bureau's final population count for 1980.

(c) State appropriations divided by personal income, in thousands of dollars, reported by the U. S. Commerce Department for 1980.

(d) Increase in appropriations for 1981-82 over 1978-80, as reported by M.M. Chambers.

(e) Increase in appropriations for 1981-82 over 1971-72, as reported by M.M. Chambers.

(f) Two-year increase in appropriations adjusted for inflation of 26.3 per cent, as indicated by the Labor Department's Consumer Price Index for June, 1981, compared with June, 1979.

(g) Ten-year increase in appropriations adjusted for inflation of 123.4 per cent, as indicated by the Labor Department's Consumer Price Index for June, 1981, compared with June, 1971.

EMPLOYEE HEALTH PROMOTION SERVICES

This questionnaire is being distributed to selected employers in the counties of: Ashland, Carroll, Crawford, Holmes, Richland, Stark, Tuscarawas, and Wayne. The purpose of the questionnaire is to provide a measure of the interest which exists in the subject of employee health promotion services. If sufficient interest is expressed by area employers, then we intend to develop a workshop or provide educational material to assist employers in this area. This questionnaire is being distributed by the Health Planning and Development Council of Wooster, Ohio.

_____

Name of Corporation

_____

Mailing Address

_____

1. Does your firm currently provide services which are designed to promote improved health among your employees? Such services as hypertension screening, cancer screening, health education, smoking cessation, physical exercise, stress management training, nutrition, weight control and alcoholism control are included within the definition of employee health promotion.

   ☐ yes ☐ no ☐ not certain

   If yes, please provide a brief description of these services.

   _____

   _____

   _____

   _____

2. Do you feel that health promotion services are or could be of benefit to your organization and your employees?

   ☐ yes ☐ no ☐ not certain

3. Do you feel that health promotion services could be designed to help address the problems of:

Employee Morale:	☐ yes	☐ no	☐ not certain
Employee Absenteeism:	☐ yes	☐ no	☐ not certain
Workers Compensation Costs:	☐ yes	☐ no	☐ not certain
Early Retirement:	☐ yes	☐ no	☐ not certain
Accidents:	☐ yes	☐ no	☐ not certain
Improved Productivity:	☐ yes	☐ no	☐ not certain

4. Would you like to receive additional information about the concepts of employee health promotion?

☐ yes ☐ no

5. If yes, which types of information would be most helpful?

☐ Examples of the types of services which might be included in an employee wellness program.

☐ Examples of successful employee wellness programs elsewhere.

☐ The potential benefits of health promotion services.

☐ The cost of employee illness.

☐ Other (please specify):

_____

_____

_____

6. Would you or a representative be available to attend a one day conference on the subject of employee wellness if one were offered near you.

☐ yes ☐ no ☐ not certain

7. Would you or a representative be available to provide assistance and advice in developing efforts in the community to promote the development of disease prevention/health promotion programs?

☐ yes ☐ no ☐ not certain

8. Please identify the name and address of the person in your organization who is the most appropriate for us to communicate with on this subject in the future.

_____

_____

_____

9. Please offer any additional comments, suggestions or questions which you may have on the subject of disease prevention/health promotion.

_____

_____

_____

_____

_____

_____

_____

_____

_____

Return Completed Questionnaire
in Envelope Provided
by Friday, May 8, 1981
to

Robert Groves
Health Planning and Development Council
405 W. Liberty St.
Wooster, Ohio 44691
(216)264-9939

Completed By:_____ Title:_____

Telephone:_____

and needs of people and the ways the institution meets or could meet them. Market analysis is, in its simplest description, a more coherent way to plan institutional responses to conditions within the College's service area. Ihlanfeldt suggests a framework for the gathering and use of data. He states:

> There appear to be three basic components in the marketing of higher education: research, strategy and communication.
>
> Research involves discovering what people think of a given school and then developing a profile of the type of person who would be likely to enroll.
>
> Such an analysis of the potential student is necessary before a recruitment strategy can be developed, because that plan should answer the question: how can we contact the largest number of potential applicants in the most effective manner? If no research has been conducted, a school has only a vague notion of who its probable enrollees might be; this, of course, leaves success in recruiting to chance.
>
> Deciding on the type of communications to be used in recruitment is thus dependent on a college's strategy, which is, in turn, based on research. Communications should include not only the admissions office personnel, but also students, faculty, and alumni, all publications, and in general, any segment of the college with which potential students might have contact.[20]

Most postsecondary education was created to be responsive to the higher education needs of students immediately out of high school who would complete their education in an uninterrupted manner. Therefore, most colleges began their marketing efforts (research, strategy, and communications) with demographic data as it relates to secondary school systems. As the societal expectations of "equal educational opportunity" and "right to work" moved from concept to operational reality, colleges began to modify their marketing efforts to include categories of data beyond "traditional" high school graduates. As governmental and regulatory agencies began to legislate continuing education, colleges developed more specialized market segmentation efforts.[21] These efforts are now being extended to a broad range of agencies and organizations. (See Appendix C)

Diagnosis Preceeds Development

The purpose of the data gathering and analysis function is the gain insights into which of several options an institution will choose in charting a course of action over the next several years. Data from one source indicate that change in the number of high school graduates between 1979 and 1995 will range from a decline of 59% in Washington D.C. to an increase of 58% in Utah. Eleven states will experience a decline of more than 30% in the number of high school graduates during that period. Bowen indicates that colleges experienced enrollment declines in 1934, 1944, and 1952 and suggests four options: (1) redirect resources toward higher quality, (2) redirect resources toward research and public service, (3) redirect resources toward new student clientele, and (4) retrenchment.[22]

Standards and protocol for options 1 and 3 will differ widely and, therefore shall not be discussed in this paper. Frances lists twelve different strategies for increasing enrollment in colleges as follows:

> Increased high-school-graduation rates of students who would otherwise drop out
> Increased credentialing by testing of high school dropouts
> Increased enrollment of low- and middle-income students
> Increased enrollment of minority youths
> Increased enrollment of traditional college-age students
> Increased retention of current students
> Increased enrollment of adults
> Increased enrollment of women 20-34
> Increased enrollment of men 35-64
> Increased enrollment of graduate students
> Increased enrollment of persons currently being served by industry
> Increased enrollment of foreign students[23]

Redirecting resources toward research and public service deserves special comment because it represents an extraordinary challenge in strategic planning.

Strategic Planning and the Public Service Function

Technology transfer as a public service function for postsecondary education is an excellent example requiring strategic planning. Ultimate purposes of technology transfer include increased productivity, revitalization of the

economy, and job creation.

Any discussion about technology transfer must begin with a definition of technology. Bugliarello offers a biosocial view of technology. He states:

> Technology is a process, it is a social process which generates and combines know-how and people in order to extend the physical range of man. The range, if you like, and power over muscles, over the brain, and over organs. Thus, technology is a people process; it's done by people and it enhances people.
>
> But it is also a biological process, because in enhancing people, it continues to be carried on outside of our bodies. And by now, really, to a growing extent, with pacemakers and artificial organs, also inside our bodies. It continues to carry out the process of evolution. Both as a people process and as a biological process, technology has been with us from the very beginning of our species some two million years ago. Thus, technology was born with people, technology has been developed by people and technology has affected people.[24]

Young says, "Technology is all the techniques, knowledge, lore, methods and tools that have helped society survive and improve its life."[25] Branscomb states, "Many people tend to think of technology as being embodied in the machines that we invent and use, but technology is certainly not machines. Technology is what people do with what they know."[26]

Ohio is a highly-industrialized state that is a national leader in fabricated metals, rubber, plastics, stone, clay and non-electrical machinery. The state, however, faces important economic challenges that include obsolescence in manufacturing facilities, decline in productivity, and below average growth in high technology and service industries. In order to meet these challenges and to provide a climate for business and industry which is supportive and conducive to expansion, the Ohio Board of Regents proposed and the Ohio Legislature funded the Ohio Technology Transfer Organization beginning with the 1979-1981 biennium. This state-wide network consisting of The Ohio State University and two-year institutions working with state and federal agencies is intended to provide small business and industry access to information, advice, and services that

are essential to economic development and job growth.

To accomplish this purpose, a full-time technology transfer agent is located on each of eleven two-year college campuses and The Ohio State University. The primary function of the OTTO agent is to assume an active role providing technological assistance to constituents within a geographic region of the state. (See FIGURE 15) The OTTO agent, whose services are free, acts as a user broker in providing direct access to member colleges and OSU or to alternative sources of assistance. Typical cases might include obtaining information about plastics, corrosion, resource recovery, solar energy, or management assistance in areas such as inventory control, business record keeping, and general management. OTTO agents have access to computerized data bases which can be searched for recently published articles on almost any topic. Plans for the 1981-1983 biennium call for the addition of four institutions to the network and technical assistance on university campuses.

Major providers of research and development include the more than 200 Federal R & D laboratories and centers representing 11 Federal agencies in the Federal Laboratory consortium. (See FIGURE 16) If the intent is to reduce the lag between production of R & D and its application, it seems logical to bring together consumer and providers to discuss needs and products and then discuss brokering and networking. Such a program could be conducted on a national, regional, state, or local service area. If conducted on a large scale, consumers could specify the technological problems to be solved on the training programs that must be conducted to deal with such projects as the B-1 bomber, the Stealth bomber, the MX missile, the F-16 fighter, or the ELF communications system. Using the format displayed in FIGURE 17, diagnosis and specification of technological problems and training needs would be followed by presentations by R & D resource providers and that, in turn, by broker plans for networking. The model would also be applicable at the local level on a

FIGURE 16

FEDERAL LABORATORY CONSORTIUM

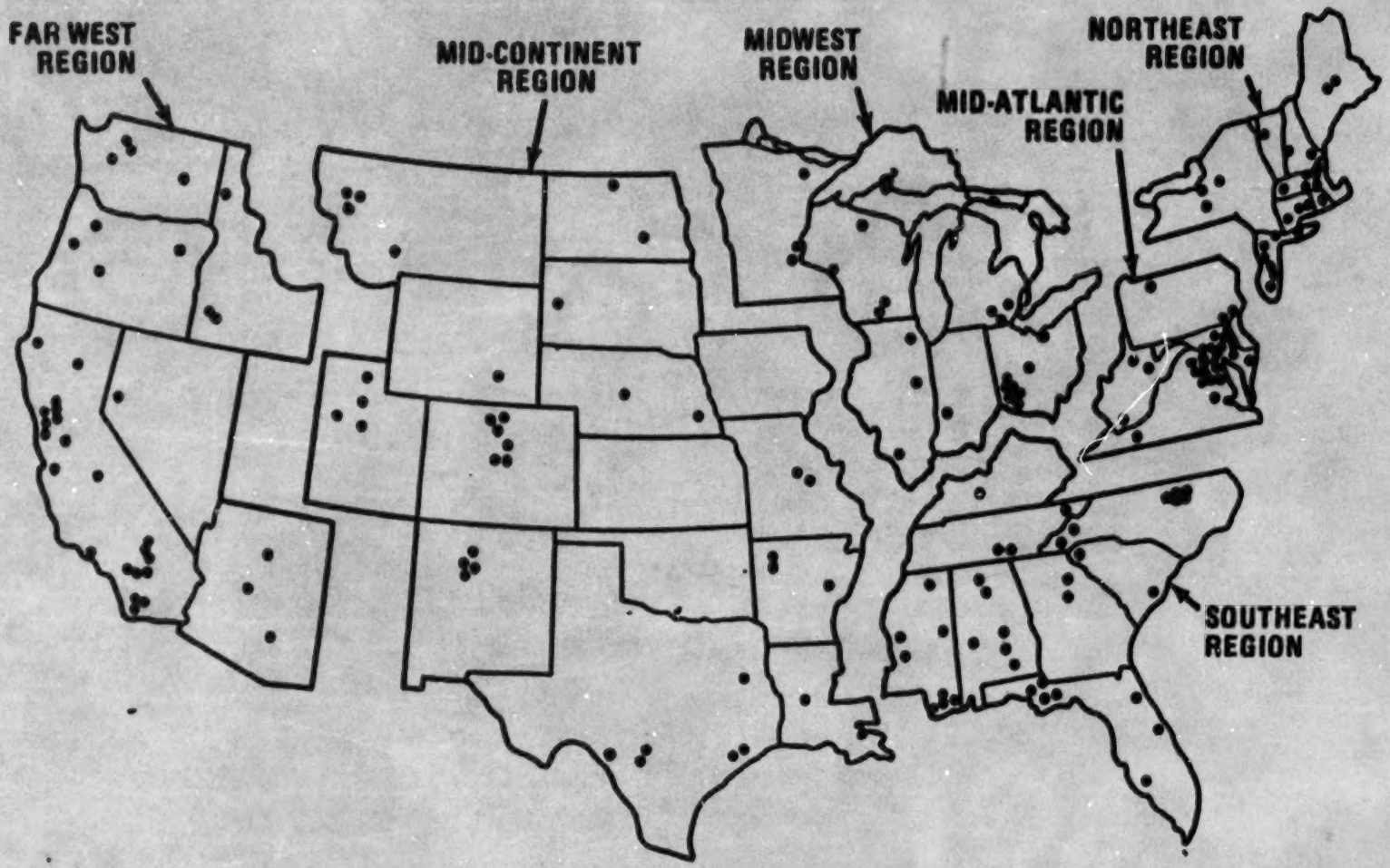
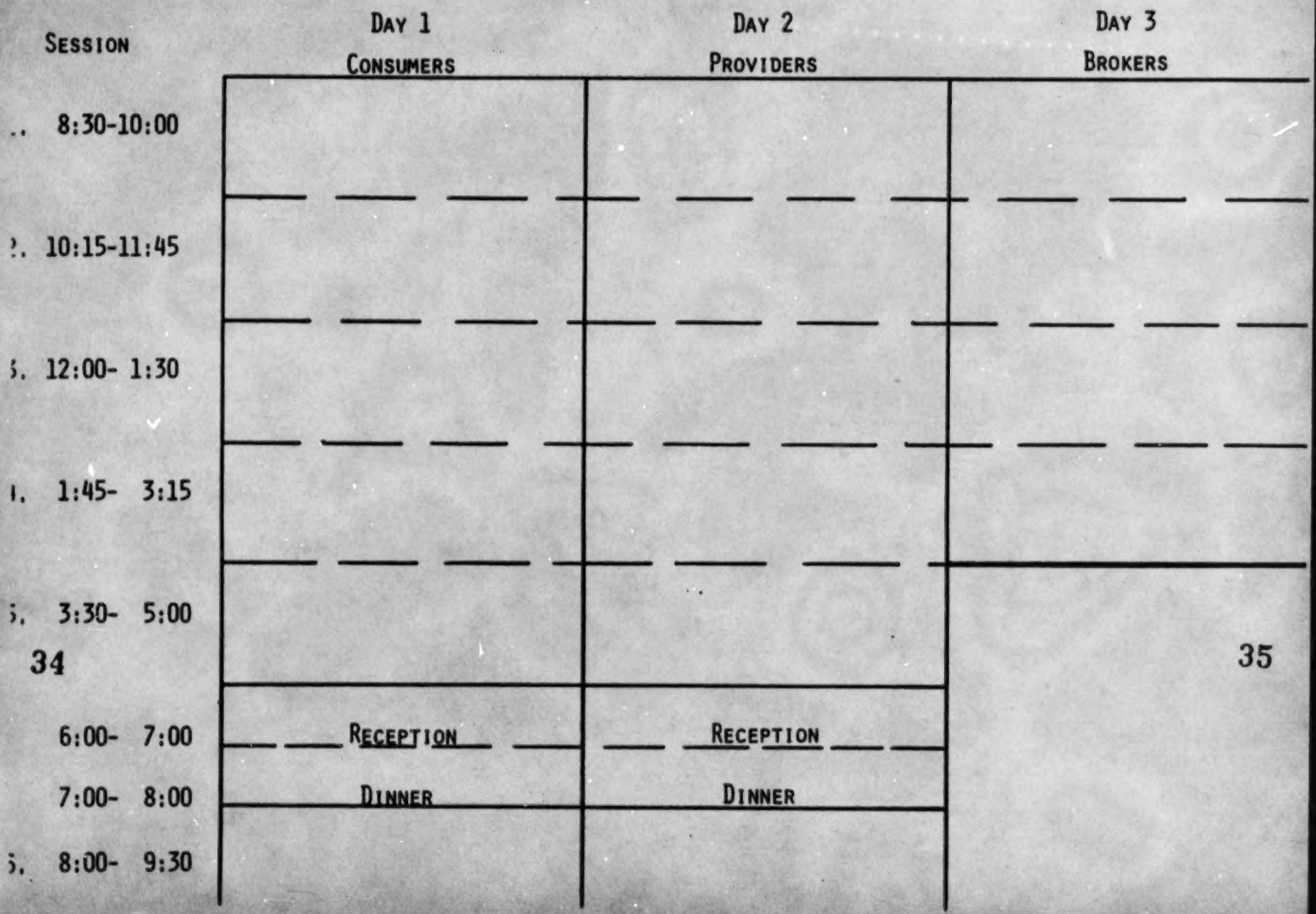


FIGURE 17

TECHNOLOGY TRANSFER CONFERENCE



smaller scale. These deliberations should result in clearer delineation of the continuum extending from "pure" research through its application, the needs of a variety of types of consumers, and the unique role that different types of postsecondary education institutions can play in increasing productivity, revitalization of the economy and job creation, (See FIGURE 18) These deliberations would have tremendous implications for the way in which we structure our organizations, the use of advisory committees,[27] and such functions as institutional research.[28]

In conclusion, the future of postsecondary education rests on the degree to which it meets the needs of the society in which it exists. As society changes, so must postsecondary education change. The way in which a specific college or a statewide system meets the challenge of being responsive to societal needs is a function, for the most part, of its sophistication in planning. Whatever our course of action, a statement from Three Thousand Futures is most appropriate:

> The future holds many unknowns. It also holds a range of already known choices that can be made by those making decisions about higher education.... External, particularly market, pressures will not alone lead to the best results. Internal thought, resolution, and determiniation are needed to assure that higher education as a whole and institutions individually reach 2000 with capacity to perform undiminished or minimally diminished by the demographic depression. The surrounding environment in the next 20 years will create some special problems that we can already see. It does not, however, determine in advance how well these problems will be solved or how inadequately human choice, or absense of choice, will settle that. A downward drift in quality, balance, integrity, dynamism, diversity, private initiative, research capability is not only possible--it is quite likely. But it is not required by external events. It is a matter of choice and not just of fate. The emphasis should be on "managing of excellence."[29]

FIGURE 18

RESEARCH AND DEVELOPMENT/DIFFUSION CONTINUUM

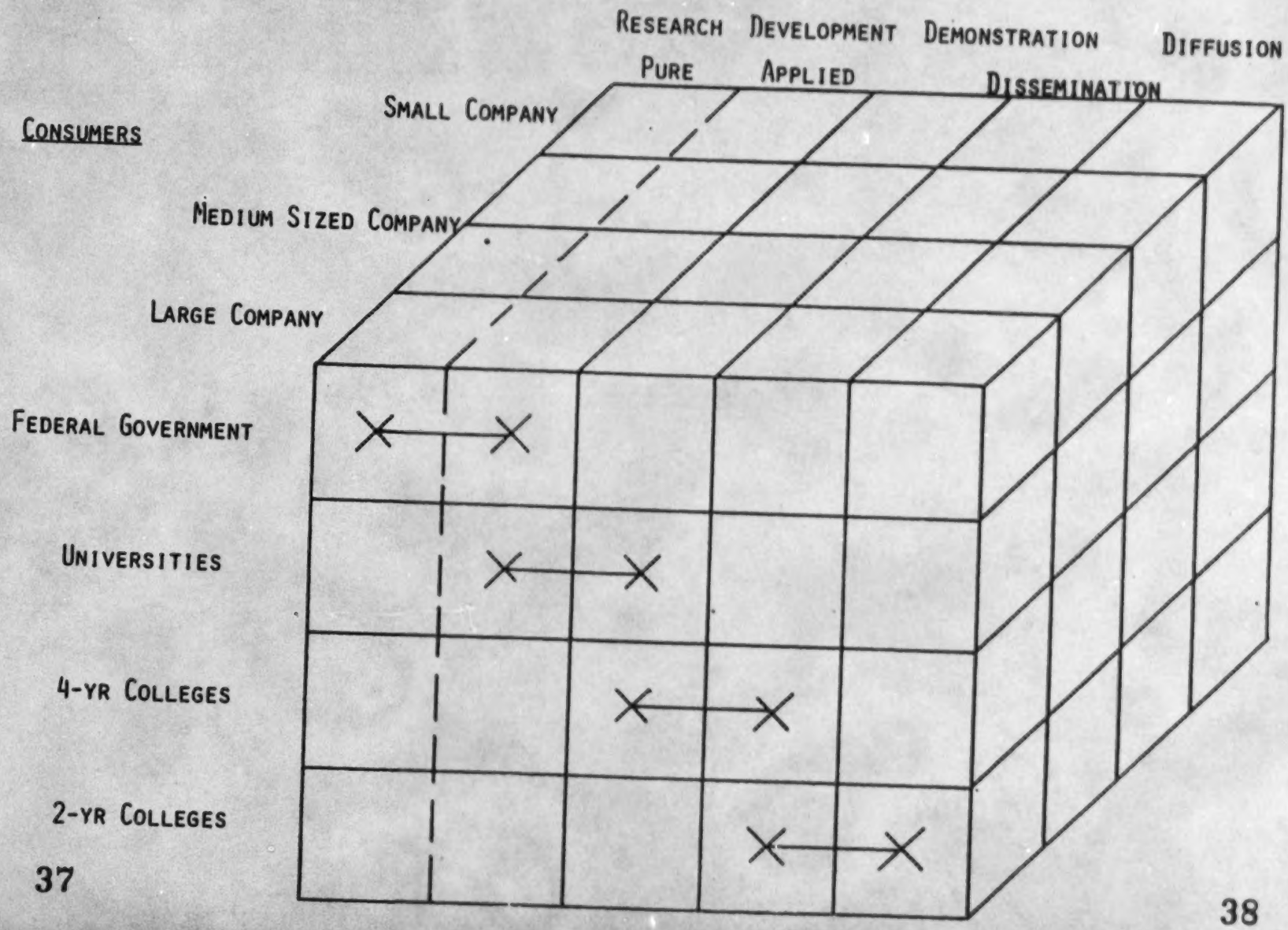


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FIGURE 5

Percent of the Civilian Labor Force of the United States in Major Occupational Groups, and Women in the Labor Force, Selected Years, 1954–1974.

Occupational Groups	1954	1960	1965	1970	1974
Professional and Technical Workers	8.9%	10.8%	12.0%	13.8%	14.0%
Managers and Administrators	9.8	10.2	9.9	10.2	10.1
Sales Workers	6.4	6.5	6.5	6.1	6.3
Clerical Workers	13.1	14.5	15.4	17.4	17.5
Craftsmen and Foremen	13.6	12.9	12.7	12.8	13.3
Operatives	20.7	18.6	18.9	18.2	16.7
Service Workers	11.1	12.6	13.1	12.5	13.4
Farmers and Farm Managers	6.0	4.0	3.0	2.0	1.8
Laborers, including Farm Workers	10.4	9.9	8.4	6.7	7.0
Total Labor Force	100.0%	100.0%	99.9%	99.7%	100.1%
(number)	64,000,000	70,150,000	75,000,000	82,200,000	90,350,000
Women in the Labor Force (number)	19,700,000	23,400,000	26,320,000	31,240,000	35,440,000
(percent)	31%	33%	35%	38%	39%

Note: Numbers and percentages are rounded. "Civilian labor force" includes the employed, classified by current job, and the "unemployed but looking for work," classified according to their latest civilian job.
Source: Adapted from U.S. Department of Labor, *Handbook of Labor Statistics 1975*, (p. 41).

SOURCE: Norman C. Harris and John F. Grede, Career Education in Colleges (San Francisco: Jossey-Bass Publishers 1977) pp. 48.

APPENDIX B - ENVIRONMENTAL SCANNING

FIGURE 14

POSTSECONDARY EDUCATION PROVIDERS

SOURCE: THE COLLEGE ENTRANCE EXAMINATION BOARD

PROVIDERS	PEOPLE
AGRICULTURE EXTENSION	12,000,000
COMMUNITY ORGANIZATIONS	7,400,000
BUSINESS AND INDUSTRY	5,800,000
PROFESSIONAL ASSOCIATIONS	5,500,000
COLLEGE AND UNIVERSITY (PART-TIME)	5,300,000
CITY RECREATION	5,000,000
CHURCHES AND SYNAGOGUES	3,300,000
COLLEGE AND UNIVERSITY EXTENSION AND COMMUNITY EDUCATION	3,300,000
GOVERNMENT SERVICES	3,000,000
PUBLIC SCHOOL ADULT EDUCATION	1,800,000
FEDERAL MANPOWER PROGRAM	1,700,000
MILITARY SERVICES	1,500,000
GRADUATE AND PROFESSIONAL EDUCATION	1,500,000
TRADE UNIONS	600,000
COMMUNITY EDUCATION	500,000
FREE UNIVERSITIES	200,000
TOTAL	58,400,000

NUMBER OF ESTABLISHMENTS AND EMPLOYEES

County	1979		1978	
	Number of Establishments	Number of Employees	Number of Establishments	Number of Employees
Richland	2498	47680	2462	48526
Crawford	930	17820	905	17281
Ashland	835	14801	812	13983
	4263	80301	4179	79790

Source: County Business Patterns 1979 (Washington, D.C.: U.S. Government Printing Office, July 1981) pp. 22-23.

OHIO BOARD OF REGENTS

OFFICE OF TWO-YEAR CAMPUSES
A SURVEY OF ORGANIZATIONAL TRAINING AND EDUCATIONAL PROGRAMS

(1) College ___
(2) SIC ___
(3) Intv'r ___
(4) M/Ques ___

The intent of this survey is to identify and describe the formal training and educational programs offered by business, industry, and public employers in Ohio that may be similar to the offerings of colleges, universities or other post-secondary institutions. Your assistance in providing the information requested will be appreciated.

DO NOT RESPOND TO CONFIDENTIAL ITEMS

(5)_____ company (6)_____ address

(7)_____ city (8)_____ state (9)_____ zip (10)_____ date

(11)_____ responding official (12)_____ no. of employees (13)_____ phone

		Yes (✓)	No (✓)
1.0	Are formal training or educational programs offered by your company or agency in Ohio? If No, proceed to item 12.0. (1.0)	( )	( )
2.0	Kind of Training Offered:		
2.1	Professional or managerial preparation. (2.1)	( )	( )
2.2	Upper or graduate level technical or scientific training in the sciences, engineering, or other disciplines. (2.2)	( )	( )
2.3	Technical training in company methods, practices, and equipment primarily for semi-professional level aides or technicians. (2.3)	( )	( )
2.4	Supervisory and/or mid-management training. (2.4)	( )	( )
2.5	On-the-job training for production, office, technical and/or skilled trades employees. (2.5)	( )	( )
2.6	Apprenticeship program (s). (2.6)	( )	( )
2.7	Personal improvement and cultural appreciation programs and courses. (2.7)	( )	( )
2.8	General and/or basic education especially for high school non-graduates. (2.8)	( )	( )
2.9	Other (please specify: _____		
3.0	Location of your training facilities:		
3.1	At this company/agency facility. (3.1)	( )	( )
3.2	At other company/agency locations in Ohio. Please list: (3.2)	( )	( )

3.21 _____ Office/Firm/Agency _____ Contact Person

_____ Address _____ Title

_____ City _____ Zip _____ Phone

3.22 _____ Office/Firm/Agency _____ Contact Person

_____ Address _____ Title

_____ City _____ Zip _____ Phone

Additional items on back of page:

			Yes (✓)	No (✓)
4.0	**Clientele Served:**			
	4.1 Employees	(4.1)	( )	( )
	4.2 Dependents of Employees	(4.2)	( )	( )
	4.3 Employees of other firms and organizations via contract	(4.3)	( )	( )
	4.4 Other (Please specify) _____			
	_____			
5.0	**Organization of Instruction** (exclude on-the-job training or O.J.T.):			
	5.1 Short term workshops, conferences, and seminars (maximum duration, 3 weeks).	(5.1)	( )	( )
	5.2 Formal classes and courses scheduled over several weeks or months.	(5.2)	( )	( )
	5.3 Other formal classes and courses: _____			
	_____			
6.0	**Instructional Staffing** (of 5.1 through 5.3):			
	6.1 Special outside consultants or instructors hired by the company for each program or course.	(6.1)	( )	( )
	6.2 Staff members of the company/agency training department (s).	(6.2)	( )	( )
	6.3 Other employees not a part of the company/agency training Department (s).	(6.3)	( )	( )
	6.4 Faculty members from neighboring colleges.	(6.4)	( )	( )
	6.5 Other (please specify)_____			
7.0	**Instructional Schedules**			
	7.1 On employee time.	(7.1)	( )	( )
	7.2 On company time.	(7.2)	( )	( )
	7.3 On a combination of employee time and company/agency time.	(7.3)	( )	( )
	7.4 Other arrangements (please describe). _____			
	_____			
8.0	**Size of Training Effort**			
	8.1 Number of employees and others enrolled annually in courses or programs conducted or sponsored by the company/agency (exclude regular college course enrollment). Check one item (✓):			
	8.11 1-50	(8.11)	( )	
	8.12 51-200	(8.12)	( )	
	8.13 201-500	(8.13)	( )	
	8.14 More than 500	(8.14)	( )	
	8.2 Number of company/agency employees hired annually as instructors (exclude O.J.T. supervision). Check one item (✓):			
	8.21 1-3	(8.21)	( )	
	8.22 4-10	(8.22)	( )	
	8.23 11-20	(8.23)	( )	
	8.24 More than 20	(8.24)	( )	

	Yes (✓)	No (✓)

8.0 Size of Training Effort (continued)

8.3 Number of professionals planning and managing training programs of the company/agency. Check one item (✓):

8.31 1-3	(8.31)	( )
8.32 4-10	(8.32)	( )
8.33 11-20	(8.33)	( )
8.34 More than 20	(8.34)	( )

8.4 Estimated percentage of your organization's total training currently done by the company/agency is (8.4)___%

8.5 The portion of the company/agency training effort that is, or could be contracted by outside consultants, is (8.5)___%

9.0 Degrees and Certificates Awarded:

9.1 Diplomas or completion certificates are awarded upon successful completion of each course, seminar, or workshop.	(9.1)	( )	( )
9.2 Formal arrangements exist for awarding or transferring credit toward an associate (2-year) degree in a college or university branch campus.	(9.2)	( )	( )

Please name colleges or universities involved:_____

_____

9.3 Formal arrangements exist for awarding or transferring credit toward a baccalaureate degree in a college or university. (9.3) ( ) ( )

Please name colleges or universities involved:_____

_____

9.4 Formal arrangements exist for awarding or transferring credit toward a graduate degree in a college or university. (9.4) ( ) ( )

Please name colleges on universities involved and the degree (M.S., M.A., Ph.D. etc.) to which credit can be applied:

College/University	Degree
_____	_____
_____	_____

10.0 Cooperative Agreements/Contracts with Colleges, Universities, and Other Post-Secondary Schools:

10.1 Agreement (s) or contracts to provide instructional programs for company/agency employees are in effect. If Yes, list institutions: (10.1) ( ) ( )

College/University	Program Provided
_____	_____
_____	_____

Additional items on back of page:

Yes No
( ) ( )

11.0 Accreditations, Registrations, and Approvals

11.1 Accreditation, certification, approval, or other formal recognition by professional, scientific, educational, or governmental agencies has been awarded. If Yes, please list the program (s) and approval or certifying agency or organization involved. (11.1)( ) ( )

Training Program	Agency
_____	_____
_____	_____

12.0 College Fee Reimbursement for Employees

12.1 The company/agency maintains a policy through which employees are reimbursed for successful completion of college courses and programs. (12.1) ( ) ( )

12.2 Employee enrollment and reimbursement for college courses generally is

12.21 Encouraged and approved for all or most employees (12.21) ( ) ( )

12.22 Approved only when job or promotion requirements dictate the need. (12.22) ( ) ( )

12.23 Approved only when recommended by a superior (12.23) ( ) ( )

12.24 Other (please specify)_____

_____

_____

13.0 Training Needed:

Please list any training needs that could be discussed with a college official:

_____

_____

_____

_____

_____

NOTES AND COMMENTS

_____

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_____

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